REBUTTAL TESTIMONY

OF

JOHN H. RAFTERY

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2017-370-E

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is John H. Raftery. My business address is 220 Operation Way, Cayce, South Carolina. I am General Manager of Renewable Products/Services and Energy Demand Management for South Carolina Electric & Gas Company ("SCE&G" or the "Company").

Q. STATE BRIEFLY YOUR EDUCATION, BACKGROUND, AND EXPERIENCE.

A. I am a graduate of Northwestern University with a Bachelor of Science degree in Mechanical Engineering. I began my public utilities career in 1994 as an Information Technology Management Consultant with Price Waterhouse and continued with Oracle Corporation in 1998. I joined SCANA Corporation in 2003 as a Client Manager in the Customer Systems Support Organization and gained the responsibilities of the Customer

Service Training Department several years later. In 2010, I assumed responsibility for the SCANA Contact Centers and Technology Services, with the addition of SCE&G's Business Offices in 2013. In 2014, I assumed my current role as General Manager of Renewable Products/Services and Energy Demand Management.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA (THE "COMMISSION")?

A. Yes, I have testified before the Commission in support of SCE&G's Petition for Approval to Participate in a Distributed Energy Resource Program in Docket No. 2015-54-E. I have also testified in SCE&G's three most recent fuel proceedings.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE COMMISSION IN THE PRESENT DOCKET?

A. No, this is the first time I am testifying in this docket.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to the testimony of Ronald Binz of the South Carolina Coastal Conservation League ("CCL") and Southern Alliance for Clean Energy ("SACE"), Steve Chriss of Wal-Mart Stores East, LP and Sam's East, Inc. (collectively, "WalMart"), and Richard Baudino of The Office of Regulatory Staff ("ORS") regarding their

discussion of renewable resources, energy efficiency, customer service quality and electric reliability.

II. SCE&G'S CURRENT RENEWABLE AND HYDRO-ELECTRIC PRACTICES

Q. PLEASE DESCRIBE SCE&G'S CURRENT RENEWABLE AND HYDRO-ELECTRIC PROGRAMS.

A. The Company has a very robust program for encouraging renewable resources on its system, which includes 335 megawatts ("MW") of interconnected solar photovoltaic capacity, 797 MW of non-emitting hydro capacity, and 55 MW of biomass capacity.

Q. SPECIFICALLY RELATED TO SOLAR, HOW DO THE COMPANY'S RESULTS COMPARE TO OTHER UTILITIES?

A. According to the Smart Electric Power Alliance ("SEPA"), of 423 utilities across the United States, SCE&G installed the 6th highest amount of solar in 2017. With over 265 MW installed in 2017, SCE&G ranked behind only Pacific Gas & Electric (CA), Southern California Edison (CA), Duke Energy Progress (NC), Austin Energy (TX) and Xcel Energy (MN).

Q. HOW DOES THE COMPANY'S DISTRIBUTED ENERGY RESOURCES PROGRAM ALIGN WITH THE STATE'S POLICY GOALS?

A. The Company's distributed energy resources program is entirely consistent with the commitments made in the Distributed Energy Resources Act of 2014 ("Act 236") in which the General Assembly established goals for both utility-scale and customer-scale renewable resources. SCE&G's specific renewable energy plans were approved by the Commission in Docket No. 2015-54-E in Order No. 2015-512.

Q. WERE ANY OF THE PARTIES IN THIS DOCKET INVOLVED IN DOCKET NO. 2015-54-E?

A. Yes. WalMart was a signatory to the settlement agreement in Docket No. 2015-54-E, as was CCL and SACE.

Q. **AS SIGNATORIES TO THE SETTLEMENT AGREEMENT IN DOCKET NO. 2015-54-E, WHAT IF ANY SPECIAL ARRANGEMENTS ARE MADE FOR ONGOING COLLABORATION?**

A. Among other things, the signatories to the settlement agreement in Docket No. 2015-54-E are invited no less than twice annually to actively participate in a Distributed Energy Resources Collaborative led by SCE&G. In these collaborative discussions, program updates are shared and participants are encouraged to provide feedback on performance and suggested improvements.

Q. SINCE THE COMMISSION ENTERED ORDER NO. 2015-512, HOW HAS SCE&G PERFORMED AS COMPARED TO ITS RENEWABLE RESOURCE GOALS?

A. Since 2015, SCE&G has exceeded the renewable resource goals established by the Legislature in Act 236 and by the Commission in Order No. 2015-512. SCE&G was the first investor owned utility in South Carolina to the meet its statutory goal for interconnected, customer-scale distributed energy resources (42 MW as of June 2017) and was also the first to meet its utility-scale goal (48 MW as of 2017) with nine solar farms online.

SCE&G also has one of the nation's largest utility-sponsored community solar programs with 16 MW of capacity across three solar farms completely sold-out. A total of 14 MW is already online, serving benefits to schools, churches, municipalities, residential and low-to-moderate income customers.

In addition, the Company has significant additional solar renewable resources that are subject to interconnection agreements or requests, and for which power purchase agreements have been signed. If installed as anticipated, these resources will result in SCE&G having approximately 1,050 MW of solar generation on its system.

Q. IS THE COMPANY APPROACHING OPERATIONAL LIMITS ON THE AMOUNT OF SOLAR GENERATION?

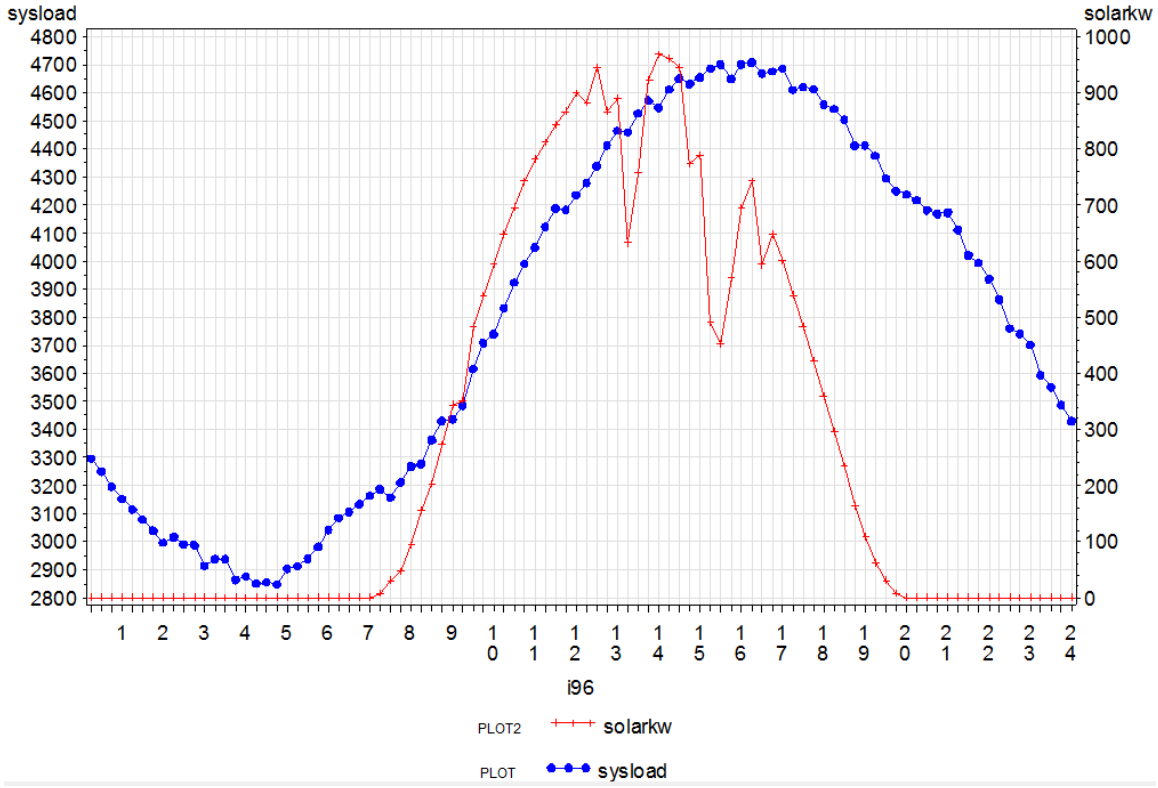
A. Yes. Without additional energy storage resources or capital improvements enabling existing plants to operate at lower minimum generation levels, the Company will have significant difficulty accommodating the approximately 1,050 MW of solar that is anticipated to be installed on its system. As a result, these farms will likely need to have their energy output curtailed at certain times.

Q. WHY IS THAT THE CASE?

A. In SCE&G's 2018 Fuel Proceeding Docket 2018-2-E, Dr. Joe Lynch referenced slides showing system loads and the difficulties SCE&G faces in handling additional solar loads. The following figures illustrate these points.

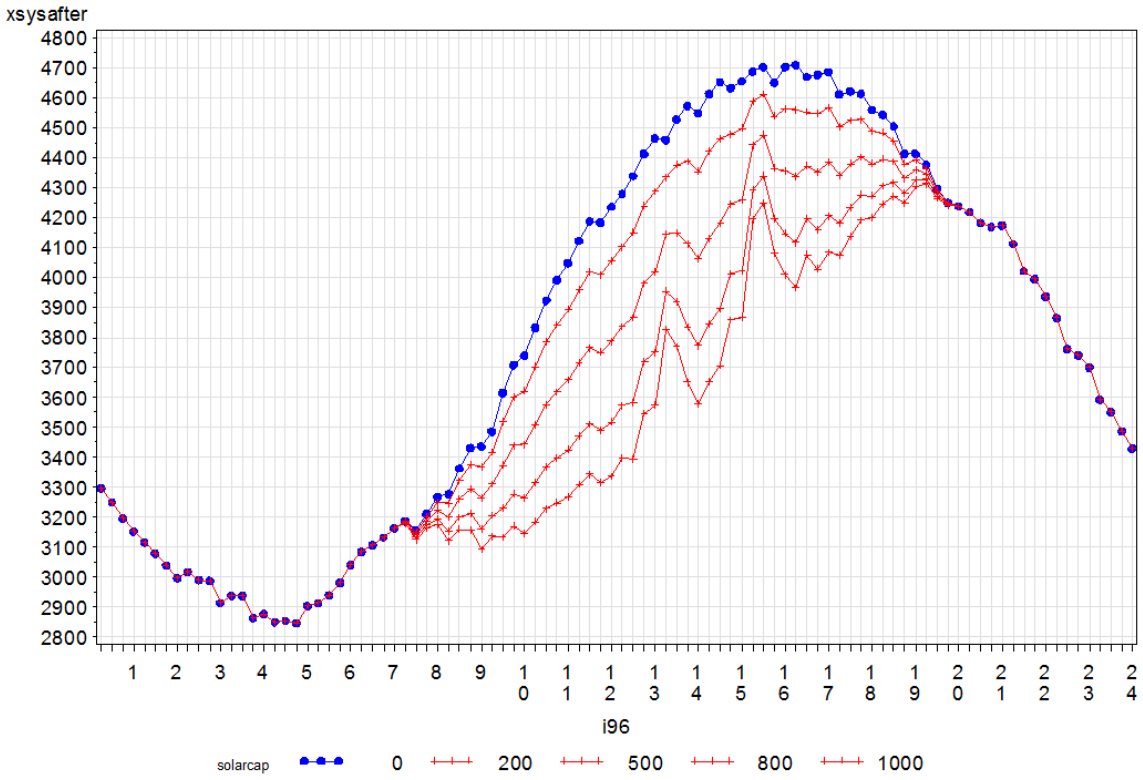
Illustration 1 shows actual system demand and actual solar generation (scaled up to 1,000 MW) during SCE&G's summer peak demand period for 2017, which occurred on August 17th of that year. As the graph shows, the peak solar generation potential and the peak in summer electrical demand are not identical. Solar displaces peak demand from midmorning to midafternoon, but drops off rapidly beginning at approximately 5:00 pm. However, demand does not drop until later and remains high until late in the evening.

Illustration 1: Solar Potential during the 2017 Summer Peak Day



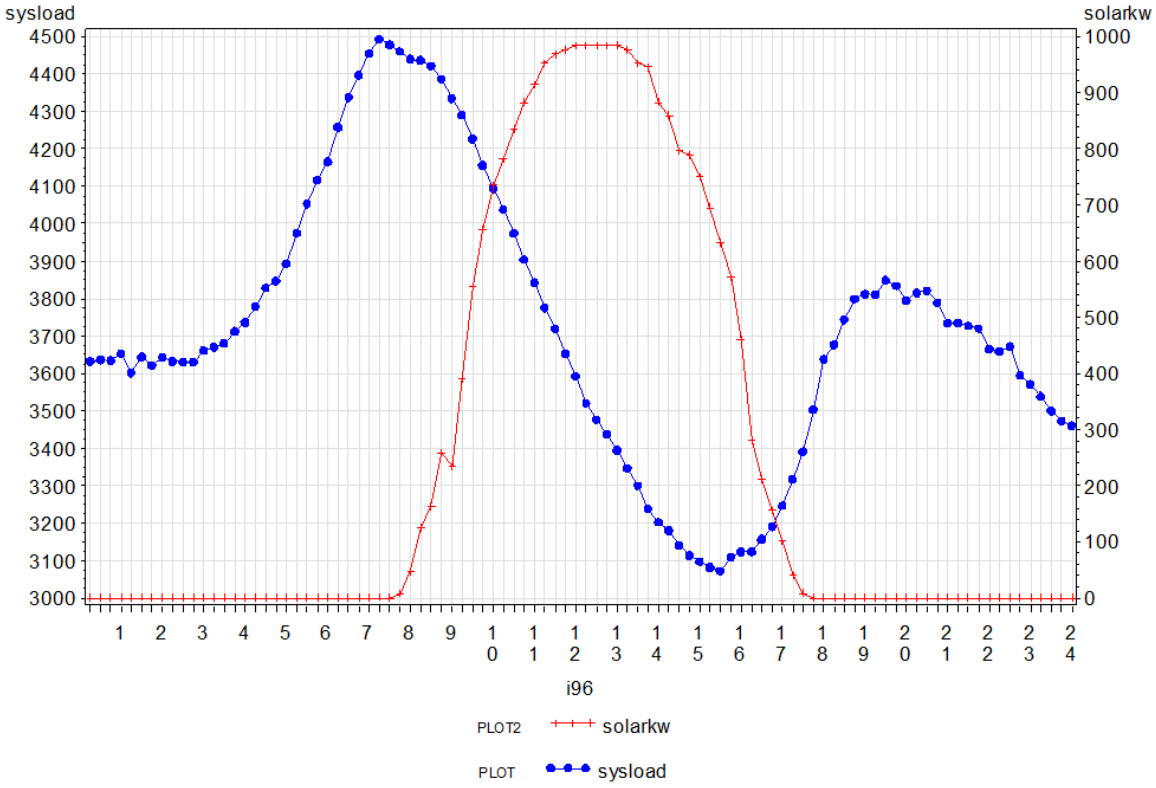
The following illustration shows the system peak, net of solar generation, during the same peak day assuming SCE&G had varying amounts of solar generation connected to its system at the time. The amounts shown include 200 MW, 500 MW, 800 MW and 1,000 MW of solar generation. As this graph shows, with 1,000 MW of solar generation the peak, net of solar generation, shifts from mid-afternoon to 8:00 pm, a time when the sun has set and solar is unable to contribute any generation to the system.

Illustration 2: Varying Solar Potential during the 2017 Summer Peak Day



The next graph shows solar generation as compared to the 2017 winter peak. It shows that the system peak demand occurs during the early morning hours, before sunrise, and there is no solar generation at the time. Thus, any amount of solar capacity connected to the system (to include 1,000 MW) would not directly contribute to meeting winter peak demand.

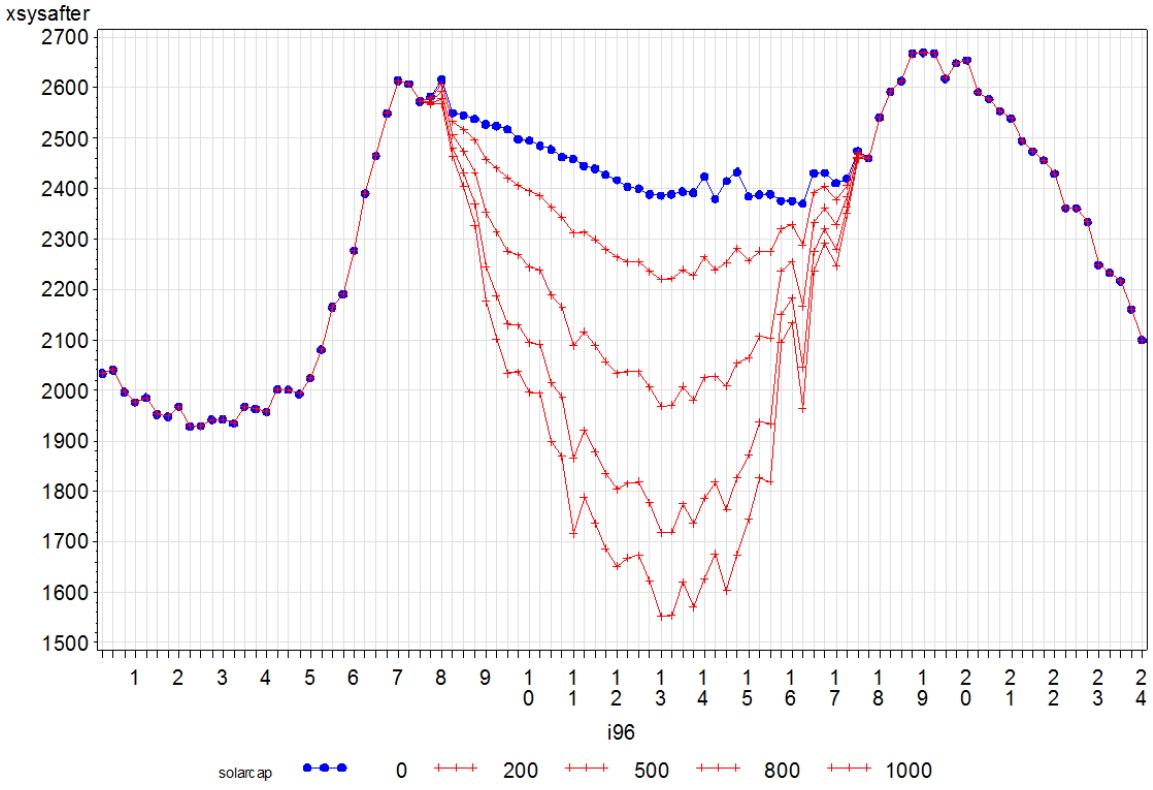
Illustration 3: Solar Potential during the 2017 Winter Peak Day



The next illustration shows the possible effect on dispatchable generation resources on a shoulder day, a day when historical system peak demands are not reached, but significant loads are nonetheless experienced on the system. The shoulder day shown is January 19, 2017. The illustration shows that with 1,000 MW of solar generation connected to the system , the demand to be met from non-solar resources would swing from approximately 2,600 MW at 8:00 am, to approximately 1,550 MW at 1:00 pm and back to approximately 2,650 MW at 7:00 pm. This presents operating challenges from the perspectives of steep ramping up and down, as well as keeping sufficient generation reserves online during new daytime minimum loads in order to serve the evening peaks

when solar is unavailable. If the solar generation combined with the generation reserves is more than the daytime minimum load, SCE&G's System Control would likely need to curtail the solar generation output in order to balance the system.

Illustration 4: Demand Net of Renewable Resources on a Shoulder Day



Q. HOW SHOULD A REVIEW AND DISCUSSION OF RENEWABLE RESOURCES BE HANDLED WITHIN THE REGULATORY PROCESS?

A. The procedure for a distributed energy resource program review is set forth in S.C. Code Ann. 58-39-130**.** Furthermore, and as mentioned

previously, the Company convenes a Distributed Energy Resources Collaborative twice a year and reports annually on program performance during its fuel proceeding. Participants in the collaborative meetings include Walmart, CCL and SACE, among others, in order to review, discuss and propose revisions and improvements to SCE&G's distributed generation resource programs. If it is determined that additional review and discussion of renewable resources is appropriate within the regulatory process at this time, then the appropriate place to discuss such proposals is within these groups, as well as the Company's integrated resource planning dockets.

Q. IN TERMS OF ENERGY EFFICIENCY AND DEMAND RESPONSE STAKEHOLDER PROCESSES, PLEASE DESCRIBE SCE&G'S ACTIVITIES.

A. As required by Order No. 2010-472, SCE&G convenes no less than twice a year an Energy Efficiency Advisory Group. Similar to the Distributed Energy Resources Collaborative, this Energy Efficiency Advisory Group discusses the energy efficiency programs of the Company, and offers feedback on suggested improvements to the portfolio's performance, whether by adjustments, additions or deletions to the measures or specific programs themselves.

Q. IS THE COMPANY EXPLORING ANY OTHER ENERGY EFFICIENCY OR DEMAND RESPONSE ACTIVITIES?

A. Yes. SCE&G is undertaking an exhaustive Energy Efficiency Potential Study to be conducted by ICF International and Opinion Dynamics Corporation to ascertain what changes and improvements are warranted in its current energy efficiency programs. The results of those studies will be presented to the advisory group, and this Commission at the appropriate time next year.

Q. ARE ANY OF THE PARTIES IN THIS DOCKET INVOLVED IN THE ENERGY EFFICIENCY ADVISORY GROUP?

A. Yes. CCL is an active member in the Energy Efficiency Advisory Group as is the ORS and the South Carolina Energy Office.

Q. ARE OTHER COLLABORATIVE STAKEHOLDER PROCESSES UNDERWAY IN ADDITION TO THE DISTRIBUTED ENERGY RESOURCES COLLABORATIVE AND THE ENERGY EFFICIENCY ADVISORY GROUP?

A. Yes. The South Carolina Energy Office under the ORS is conducting a collaborative stakeholder review of current renewable energy programs under Act 236 which is intended to create a new version of Act 236 based on the knowledge and experience gained since that act was passed. Some 47 stakeholders are taking part in that proceeding, meeting twice a month, with an objective of proposing legislation or other appropriate regulatory action related to the next stage in the state's development of renewable resources programs. This working group is

charged to "advance state energy policy" and is an appropriate place to consider additional renewable energy and energy efficiency programs in a broad and comprehensive stakeholder process.

Q. ARE ANY OF THE PARTIES TO THIS DOCKET MEMBERS OF THAT STATE ENERGY PLAN GROUP?

A. Yes, Walmart, SACE and CCL are all members of this working group, as are the following intervenors in this case: AARP, Central Electric Power Cooperative, ORS, the Sierra Club, the South Carolina Energy Users Committee, the South Carolina Public Service Authority, and the South Carolina Solar Business Alliance.

Q. DO YOU BELIEVE THAT IT IS APPROPRIATE FOR CONDITIONS RELATED TO RENEWABLE RESOURCE PROGRAMS TO THE MERGER TO BE TIED TO THESE PROGRAMS?

A. No, contrary to the testimony of Mr. Binz and Mr. Chriss, I do not believe it is appropriate to use the current docket to short-circuit the process taking place before the South Carolina Energy Office. The stakeholder process should be allowed to reach its conclusion and present its recommendations to the General Assembly. In addition, the stakeholder processes and review processes set up under Commission Order No. 2015-512 (Renewables) and No. 2010-472 (Energy Efficiency) should be the

place for considering program modifications in an orderly, efficient and comprehensive manner.

Q. A PROPOSAL HAS BEEN MADE TO REQUIRE SCE&G TO SOLICIT ENERGY RESOURCES THROUGH AN RFP PROCESS. IS SUCH A STEP NECESSARY?

A. No. Pursuant to Order No. 2005-2 at page 49, SCE&G must issue an RFP for any non-base load generation additions.

Q. CAN YOU RESPOND TO ORS WITNESS BAUDINO'S CONCERNS OF CUSTOMER SERVICE QUALITY?

A. Certainly. As the former manager of SCE&G's call centers and business offices, I can attest firsthand to SCE&G being driven by excellence in customer service. According to JD Power's inaugural digital experience study in March of 2018, SCE&G ranked 9th out of 67 of the largest electric, natural gas and water utilities in the United States, as it evaluated customer perceptions of the utilities' websites, mobile apps, social, chat, email and text functions. In June of 2016, ESource ranked SCE&G 4th out of 90 North American electric and natural gas utilities for its seamless customer experience in its interactive voice response system (IVR) over the phone. Finally, and most importantly, through post call surveys SCE&G customers rated SCE&G agents' courtesy as 96% (an average score between an 8 and 9, with 9 as the highest rating possible) as well as 95% in overall service satisfaction (an average score between an 8

and 9, with 9 as the highest rating possible). Witness Baudino's reference to the JD Power Residential Customer Satisfaction Study is undoubtedly skewed based on the nuclear abandonment and public sentiment, and it is not based on actual service provided by SCE&G Electric Operations and Customer Service professionals. In fact, Market Strategies International just released their 2018 Third Quarter Residential Scoring Summaries. Although SCE&G scored below average in many Brand Trust areas, it scored an A- in Service Satisfaction and an A in Customer & Field Service.

Q. IS THERE ANY OTHER INFORMATION TO SHARE ON SCE&G'S COMMITMENT TO CUSTOMER SERVICE.

A. Yes. One of the best places to see the commitment of the Company and its employees is in its engagement with customers in need of help. SCE&G's Customer Assistance Department works with over 180 social service agencies in the communities it serves. In 2017, these partnerships resulted in over $9.4 million dollars in utility bill assistance to more than 24,500 SCE&G customers, including senior citizens, lower income, and those with medical needs. Through September of 2018, these partnerships have already resulted in securing over $8.2 million in utility bill assistance to more than 26,000 SCE&G customers in need.

Another important program is SCE&G's Project Share that provides year-round utility bill assistance to help SCE&G customers in need. One hundred percent (100%) of program funds contributed by employees and

customers goes directly to the program. In 2017, over $170,000 in Project Share utility bill assistance was distributed to community action agencies in SCE&G's service area. In 2018, SCE&G made a separate $100,000 corporate contribution to Project Share due to colder than normal winter weather.

Q. DO YOU AGREE WITH MR. BAUDINO'S RECOMMENDATIONS ON SAIDI AND SAIFI MEASURES?

A. In part. SAIDI and SAIFI are industry-accepted standards that serve as a means to evaluate reliability – both duration (SAIDI) and frequency (SAIFI). Well before Mr. Baudino presented testimony to this Commission, SCE&G not only utilized these measures for process improvements but also reported them quarterly to the ORS. In fact, SCE&G Electric Operations was privileged to work with the ORS to improve its reliability measures. Through close coordination related to technology enhancements, vegetation management, and the evaluation of reliability improvements down to the individual circuits, SCE&G customers have experienced vast improvements in reliability. Over the past fifteen years, SCE&G's reliability (SAIDI) has steadily improved from 176 minutes down to a historic level of just 81 minutes for the latest reporting year of 2017. In addition, this level of reliability has been consistently superior to neighboring investor-owned utilities and was demonstrated when SCE&G experienced a relatively limited number of outages and

quickly restored power following Winter Storm Pax, Hurricane Irma, Hurricane Matthew, Hurricane Florence, and Hurricane Michael. The SCE&G system displayed remarkable resiliency as a result of years of collaborative work around SCE&G's electric transmission and distribution systems.

Q. WHAT RECOMMENDATIONS DO YOU HAVE REGARDING SCE&G'S QUALITY OF SERVICE FOR ELECTRIC OPERATIONS?

A. SCE&G's SAIDI and SAIFI scores are at historically low levels and are among the lowest among comparable utilities in our region. SCE&G will continue to offer excellent customer service after the combination with Dominion Energy. There is no reason to impose additional, inefficient regulatory reporting requirements on SCE&G in this proceeding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.